

## **Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer**



### **Instructor's Guide**

The content of this training specific to the M-20 was taken from the M-20 user manual dated 9/2003. For more information regarding the content contact: CSE Corporation, 10225 82<sup>nd</sup> Avenue, Pleasant Prairie, Wisconsin, 53158.

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# Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer

## Package Components

The training modules listed below can be used together or separately as appropriate for each audience. This guide explains each module and provides a list of related materials.

- Instructor's Guide - gives an overview of the training package and includes an inspection checklist
- Video - lasts five minutes and introduces care and maintenance issues
- Computer Based Training (CBT) CD - covers inspection and care issues for individual trainees or groups
- Screen Saver - reminds users of 3+3 donning procedures

## Introduction

A persistent problem with self-contained self-rescuers (SCSRs) has been nagging doubts about the reliability of these important personal protective devices. One dimension of the reliability issue is the concern that workers do not adhere to manufacturers' recommended inspection and care procedures.

In order to appreciate the need to take care of their apparatus, it is important for miners to understand the protection an SCSR offers. Some mistakenly believe filter self-rescuers and SCSR provide the same level of protection, though the filter self-rescuer is approved only as protection from carbon monoxide. The SCSR can protect miners from many other toxic substances such as Sulfur Dioxide, Hydrogen Sulfide, and Acrolein, a deadly product of burning timbers. And, of course, SCSR may also protect workers from oxygen deficiency. Because the SCSR is a life saver, miners must take care to ensure the unit is ready for use if needed.

## Description of the Ocenco M-20

The M-20 is a closed circuit self-contained oxygen supply system designed for use in toxic or oxygen deficient atmospheres. Because of its small size, lightweight and rugged construction, it is belt wearable and ideally suited for self-rescue in the mining industry. The M-20 provides oxygen from a small compressed oxygen bottle. The M-20 is rugged and durable. But like anything else that is man-made, it may not work if it is not properly cared for.

## Performance Objectives

The objective of this training package is to teach miners how to conduct routine inspections on their self-contained self-rescuers and to properly care for them. It also is designed to reinforce the relationship between routine inspection and the performance of the unit when it must be donned.

After completing either the video session or the CBT module, a trainee will be able to:

- conduct the daily required inspection according to the provided checklist.
- conduct the required 90 day inspection according to the manufacturer's recommended procedures.
- always properly care for an SCSR.
- assess when a damaged SCSR should be examined for removal from service.
- know the criteria that require an SCSR to be removed from service.

## Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer

### Video Training Session

Look through the remainder of this section to become familiar with the training activity. Before conducting the hands-on portion of the training, you should review the objectives and materials thoroughly.

### Materials Needed

To conduct this training activity, you will need:

- *A VCR, TV monitor, and a copy of the videotape.*
- *Copies of the “Inspection Checklist” for trainees to follow when inspecting a unit. (Attached)*
- *Two or three SCSR units. These can be either the trainees’ own SCSRs, or extra units available at the mine. A training apparatus could also be used.*

### Conducting a Class

You are urged to follow these tips:

- 1. Present a brief introduction to trainees that explains the purpose of the class.*
- 2. Have trainees view the videotape.*
- 3. After showing the video, give each trainee a copy of the “Inspection Checklist”. Demonstrate the procedure for inspecting the unit and have trainees follow along with the checklist.*
- 4. Ask trainees if they have any questions and discuss any points they may not understand.*
- 5. Next, break trainees into groups of two or*

*three. Using the “Inspection Checklist”, have miners in each group inspect an SCSR.*

*6. After all trainees have finished inspecting their units, ask several to share with the class what they found.*

*7. As pointed out in the video, the SCSR will provide protection in an irrespirable atmosphere. Remind trainees that as long as they can still breathe from the apparatus after donning it, the unit is still providing oxygen. The breathing resistance will increase when the unit is working.*

*8. Discuss with trainees the importance of caring for the unit when in the mine. Miners need to understand that the SCSR may not work properly if internal components are damaged.*

### Care and Maintenance of the Ocenco M-20

This information is provided for trainers to use during class discussion. The following procedures should be followed to care for and maintain the M-20.

- 1. Inspection: Each day, begin by checking the seal on the unit.*
  - a. Look at the oxygen pressure gauge. The pointed white indicator should be in the green. If the indicator is in the red, or if it cannot be seen due to case damage or some other obstruction, the unit must be removed from service.*
  - b. Check the latch/cover band to ensure that it is correctly positioned and has not been severely dented or worn.*

## Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer

*c. Check the gap between the cover and the base. An excessive gap indicates that the unit has been opened and must be taken out of service.*

*d. Check that there are no cracks, burns, or other deformities in the case.*

*e. Check that there is no moisture, dirt or debris visible through the base or gauge window*

*f. Inspect the factory service date label, and ensure that the date has not passed.*

*g. Check to ensure the belt loops are not broken.*

*4. Determine if there is an excessive gap between the cover and the base.*

*5. Determine if the M-20 is within its service life by inspecting the factory service date label.*

*6. Describe what steps must be taken to keep it ready for use including: a.) keeping it clean and not subject so severe physical abuse and b.) making sure the M-20 is not in an environment where it will be subjected to temperatures above 140°F or below 10°F.*

*2. Maintenance: After the unit has passed inspection, it's up to each miner to keep it ready for use.*

*a. Always keep the unit clean and protect it from abuse. It should not be thrown about or subjected to severe physical abuse.*

*b. Do not store the M-20 in an environment where it will be subjected to temperatures above 120°F or below 27°F.*

Following instruction, miners should exhibit mastery in inspecting the M-20. This includes the following components:

- 1. Determine that the moisture indicator is undamaged and in the green.*
- 2. Determine the latch/cover band is not displaced, dented or worn.*
- 3. Determine that there are no cracks, burns or deformities in the plastic cover.*

Some items addressed in the training are explained more fully below:

Moisture indicator – Moisture will destroy the M-20's ability to produce oxygen. The moisture indicator shows whether moisture has penetrated the unit.

Seal – The seal keeps moisture from entering the unit.

Cover – Dents or deformations in the stainless steel cover can compromise the M-20's ability to function.

## Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer

### Computer-Based Training

Look through the remainder of this section to become familiar with the training activity. Before conducting the hands-on portion of the training, you should review the objectives and materials thoroughly.

#### Materials Needed

To conduct this training activity, you will need:

- *A personal or laptop computer with Windows 95 or higher and capability to read a CD.*
- *A projection unit for group presentation.*
- *The SCSR S.A.F.E.T.Y. Check CD.*
- *Two or three SCSR units. These can be either the trainees' own SCSRs, or extra units available at the mine. A training apparatus could also be used.*

#### Conducting a Class

This computer-based training can be worked individually with limited trainer supervision or it can be presented to a group of trainees by using a projection unit. A trainer should review the exercise, including reading the instructor's notes, before providing the CD to trainees.

You are urged to follow these tips:

1. Be sure the display properties on the computer monitor being used are set to minimum configuration of 16-bit color and 800 x 600 screen area.
2. Gather SCSR units to be used during the inspection activities and review the completed checklists after these activities.
3. Present a brief introduction to trainee or

trainees that explains the purpose.

4. Have printed copies of the "Inspection Checklist" for trainees to take with them after training.
5. Use the "Inspection Checklist" as an evaluation tool.
6. After all trainees complete their inspections, refer to the class discussion points under Care and Maintenance of the Ocenco M-20 found under the Video Training Session section.

### Screen Saver

A screen saver is included in this package as a reminder of the importance of every miner knowing the 3+3 donning procedures. The screen saver is available on a floppy disc. It can be copied and shared with everyone at your organization.

### Additional Resources:

Kyriazi N, Shubilla JP [2000]. Self-contained self-rescuer field evaluation: sixth phase results. NIOSH Information Circular 9451.

## Care and Maintenance of the Ocenco M-20 Self-Contained Self-Rescuer

### Inspection Checklist

Check the box if the unit passes that part of the inspection.

- ☐ **Sealed:**
  - ☐ Latch/cover band is in place and undamaged
  - ☐ No dirt, debris or moisture visible through base or gauge window
  - ☐ No excessive gap between cover and base
  - ☐ Oxygen gauge is in good condition and needle is in the green

Note any problems with seals:
  
- ☐ **Abuse not found (no signs of significant damage)**
  - ☐ Case is not cracked, burned, or deformed
  - ☐ No missing parts
  - ☐ Belt loop is present and undamaged

Note significant damage:
  
- ☐ **Time and Temperature checked:**
  - ☐ now over 10°F
  - ☐ never exposed to over 140°F
  - ☐ M-20 is within its service life, as indicated by the factory service date label